DOCUMENT RESUME

ED 461 777 CG 031 524

AUTHOR Gentile, Douglas A.; Walsh, David A.; Bloomgren, Barry W., Jr.; Atti, Jule A.; Norman, Jessica A.

TITLE Frogs Sell Beer: The Effects of Beer Advertisements on Adolescent Drinking Knowledge, Attitudes, and Behavior.

PUB DATE 2001-04-00

NOTE 17p.; Paper presented at the Biennial Conference of the Society for Research in Child Development (Minneapolis, MN, April 19-22, 2001).

PUB TYPE Information Analyses (070) -- Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *Adolescents; *Advertising; *Alcoholic Beverages; Correlation; Drinking; Influences; *Mass Media Role; Multiple Regression Analysis; *Predictor Variables; Secondary Education; Secondary School Students; Student Behavior; Student Surveys

ABSTRACT

This present research reveals how beer advertising affects adolescents' knowledge of beer brands, drinking attitudes, and drinking behaviors. In addition to traditional psychological approaches for measuring media effects on alcohol-related behaviors and attitudes, market research advertising tracking methods were included to permit a clearer and more complete picture of the effects of beer advertising on young people. Seventh through twelfth grade students (N=1,588) attending mandatory health classes in midwestern suburban schools and eastern urban schools participated in the study. Correlation analyses were conducted to determine whether the amount of money spent advertising beer brands in 1998 and 1999 strongly predicted adolescents' brand awareness, preference, and highest brand loyalty among adolescents. Regression analyses were also conducted to determine the predictors of students' intention to drink beer after they turned 21 and to determine the predictors of students' actual drinking behaviors. The pattern of results showed that the media and advertisements are significant predictors, and perhaps the most significant predictor of adolescents' knowledge and preference for beer brands, drinking behaviors, brand loyalty, and intentions to drink. (Contains 2 figures, 2 tables, 1 appendix, and 40 references.) (Author/JDM)

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Frogs Sell Beer: The Effects of Beer Advertisements on Adolescent Drinking Knowledge, Attitudes, and Behavior

Douglas A. Gentile, National Institute on Media and the Family[1]
David A. Walsh, National Institute on Media and the Family
Barry W. Bloomgren, Jr. , National Institute on Media and the Family
Jule A. Atti, State University of New York at Buffalo
Jessica A. Norman, Augsburg College

Paper presented at the Biennial Conference of the
Society for Research in Child Development (April, 2001),
Minneapolis, Minnesota

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D. GENTILE

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[1] Address correspondence to: Douglas A. Gentile, Ph.D., National Institute on Media and the Family, 606 24th Avenue South, Suite 606, Minneapolis, MN 55454. Phone: 612/672-5437; Fax: 612/672-4113; E-mail: dgentile@mediafamily.org. We wish to thank Tara van Brederode for her helpful comments, and the four schools for their support.

CG031524

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Abstract

The present research reveals how beer advertising affects adolescents' knowledge of beer brands, drinking attitudes, and drinking behaviors. In addition to traditional psychological approaches for measuring media effects on alcohol-related behaviors and attitudes, market research advertising tracking methods were included to permit a clearer and more complete picture of the effects of beer advertising on young people.

Seventh through twelfth grade students (N = 1,588) were surveyed. Students were recruited from mandatory health classes in Midwestern suburban schools, and an Eastern urban school

Advertisers often describe advertising as having four goals: (1) Building brand awareness/recognition, (2) building brand preference, (3) obtaining product purchase/use, and (4) building brand loyalty. Correlation analyses were conducted to determine whether the amount of money spent by beer companies to advertise selected beer brands predicts students' responses regarding brand awareness, preference, use, and loyalty. Results show that the amount of money spent advertising beer brands in 1998 and 1999 strongly predicts adolescents' brand awareness, preference, use, and loyalty behaviors in 1999-2000. For example, the beer companies that spent the most money on advertising had the highest brand awareness, highest brand preference, highest brand use, and highest brand loyalty among adolescents. Correlations for each of these range from 0.63 to 0.79, with the highest correlation between beer advertising budgets and adolescent drinking.

Regression analyses were conducted to determine the predictors of students' intention to drink beer after they turn 21. Results show that many types of variables contribute to intention to drink, including peer variables, parent variables, media-related variables, and attitudinal variables. While each of these types of variables is an important predictor of intention to drink, media-related variables account for the greatest amount of variance in intention to drink (25%).

Regression analyses were also conducted to determine the predictors of students' actual drinking behaviors. While many types of variables contribute to whether students currently drink alcohol as well as their frequency of drinking alcohol, media-related variables (21%) and peer variables (30%) account for the greatest amount of variance predicting actual adolescent drinking behavior.

The pattern of results in this study shows that media and advertisements are a significant predictor, and perhaps the most significant predictor, of adolescents' (1) knowledge about beer brands, (2) preference for beer brands, (3) current drinking behaviors, (4) beer brand loyalty, and (5) intentions to drink.

Alcohol is the most commonly used drug during adolescence (NCHS, 2000). Recent national data indicate that 41 percent of 9th graders and 62 percent of 12th graders report drinking within the past month (Kann et al., 2000). The costs associated with youth alcohol use are high. Alcohol is a major contributor to injuries, health problems, motor vehicle crashes, crime, aggression, fighting, school problems, risky sex, and deaths (Arria, Dohey, Mezzich, Bukstein, & Van Thiel, 1995; Bailey, Pollock, Martin, & Lynch, 1998; NCHS, 2000; NIAAA, 1997). In 1999, one-third of high school students had recently (within the previous month) ridden with a driver who had been drinking alcohol, and 13 percent had recently driven after drinking alcohol (Kann et al., 2000). In 1999, 38 percent of all traffic fatalities nationally were alcohol related; alcohol-related crashes are the number one cause of teen deaths. Approximately eight young people die each day in alcohol-related crashes (MADD, 2001).

Early initiation of drinking increases the odds of negative outcomes. For example, youth who begin drinking before age 15 are four times more likely to become addicted and over twice as likely to become alcohol abusers than are those who delay drinking until age 21 (Grant & Dawson, 1997). Younger initiation of drinking is also associated with greater risk of using other drugs (MADD, 2001). In one study of adolescent alcohol abusers, 96 percent reported using drugs other than alcohol, and the pattern of drug use suggested that alcohol is often one of the first drugs used by adolescents (Martin, Arria, Mezzich, & Bukstein, 1993).

Children's exposure to media messages has been implicated as one of the causes of youth drinking. In a survey of 4,885 adults in 20 European countries, TV ads were consistently rated as a key influence on children (Advertising Education Forum, 2000). In a survey of adults in California, two-thirds stated that they believe the beer industry specifically targets teenagers in its advertising (California Issues Poll, cited in COAA, 1998). Teens themselves have reported in surveys that beer ads have a greater influence on their desire to drink in general than on their desire to purchase specific brands ("Ads for adults," cited in COAA, 1998). These feelings on the part of the public appear to be supported by research. In one longitudinal study, for example, 9th grade students' media use and drinking behaviors were measured. Youth who watched more television or music videos were more likely to have initiated drinking 18 months later than were youth who watched less. An increase of one hour per day of television viewing was associated with a nine percent increased risk of starting to drink alcohol (Robinson, Chen, & Killen, 1998).

It is estimated that children view almost 2,000 beer ads on television each year (AAP, 1995). Alcohol advertisements tend to portray drinking as a normal behavior with no adverse consequences (Strasburger, 2001). Beer ads also use many techniques that are likely to appeal to teenagers, such as sexual imagery and celebrity endorsements (Comstock & Paik, 1991). Children who are more aware of beer advertisements are also more knowledgeable about beer brands and slogans, have more favorable attitudes toward drinking, and are more likely to report an intention to drink beer once they are adults (Grube & Wallack, 1994). Grube has stated that teenagers often pay more attention to beer commercials than to soft drink commercials, partly because beer ads use techniques, such as animation and cute animal icons, that appeal to children ("Ads' cute, animated critters", 1998).

Researchers have found small positive correlations between youth exposure to alcohol advertisements and intention to drink or actual drinking (e.g., Atkin, Hocking, & Block, 1984; Strickland, 1983, cited in Comstock & Paik, 1991; Strasburger & Donnerstein, 1999). The correlation has typically been around .20, and has been a consistent finding in the literature. This relatively small direct correlation may suggest to some that advertising does not have an important effect. Yet it is possible that advertisements may have a large effect and still show a small simple correlation between exposure and behavior (or intention). A reasonable hypothesis is that the effect may be mediated by some intervening variable(s).

One mediating variable that has received empirical support is that of alcohol "expectancies." Expectancies can be defined as the attitudes (usually positive) about the effects and potential benefits that are derived from drinking. They are theoretically and empirically linked to advertising, because they are usually operationalized as the types of attitudes that beer ads attempt to teach, such as "There is always beer at a really good party," or "You have more fun if you're drinking beer." Expectancies have been shown to predict adolescent drinking (e.g., Christiansen & Goldman, 1983). They have been found to be strong in children as young as 8 (Miller, Smith, & Goldman, 1990). Among school-age children, expectancies predict intention to drink as an adult (Austin & Meili, 1994; Grube & Wallack, 1994).

Beyond influencing attitudes (i.e., expectancies), media and advertising may have other indirect effects on adolescent drinking intentions and behavior as well. For example, peer attitudes and behaviors are well-known predictors of adolescent drinking. The question remains, where did the peers learn their attitudes about drinking? As researchers studying the effects of tobacco advertising have stated:

> Teens and preteens somehow get the idea that smoking makes one sexy, athletic, cool, or macho. The tobacco industry says these ideas come from their peers. No one asks where these peers -- other kids -- get these ideas. Yet about the only place in our society where these silly images occur is advertising. So-called peer pressure explains little. It is merely a clever term used to shift blame from the manufacturer and advertiser to the user. Like peer pressure, "parental example" does not just spontaneously occur. Parents of today started smoking as children, and no doubt had similar silly ideas about what smoking would do for their images (DiFranza, Richards, Paulman, Fletcher, & Jaffe, 1992, p. 3282, cited in Strasburger, 2001, p. 420).

Media effects researchers have long recognized that it is important to move beyond the "hypodermic syringe" model of media effects (e.g., Baille, 1996). That is, it is rare that watching something on television immediately causes one to directly imitate it. While this can happen, it usually only occurs under fairly specialized circumstances (e.g., Bandura, 1965). One group of researchers summed up the argument as follows:

> To reduce the argument regarding the demonstrable effects of massive advertising campaigns to the level of individual behavior is absurdly simplistic....Rather, what we are dealing with is the nature of advertising itself. Pepsi Cola, for example, could not convincingly prove, through any sort of defensible scientific study, that particular children or adolescents who consume their products do so because of exposure to any or all of their ads (Orlandi, Lieberman, & Schinke, 1989, p. 90, cited in Strasburger, 2001, p. 425).

Advertising is designed to affect behavior, but advertisers know that the path to changes in consumer behavior is not simple or quick. However, advertisers do have scientific methods for studying the effectiveness of advertising. Despite the fact that the Board of Directors of Anheuser-Busch claims that "...the Company knows of no feasible way to determine the 'degree' to which its advertising is noticed by underage minors" (1995, cited in Leiber, 1996), advertisers have used a number of research techniques for years. Rather than measuring psychological constructs such as expectancies, advertisers usually attempt to create ads that can lead to four outcomes: brand

awareness, brand preference, brand usage, and brand loyalty. Advertisers often measure the efficacy of ads by these metrics.

Brand awareness can be defined as the recognizability of a brand. It can be measured in a number of ways. One simple method is to show people a brand and ask them whether they have ever heard of it. This method is sometimes called "aided awareness." A stricter test is achieved by using a recall measure, rather than a recognition measure. Asking people to name all the brands of beer that they can remember is an indication of "unaided awareness."

Some studies have used brand awareness as a method of measuring knowledge about beer. For example, Austin and Nach-Ferguson (1995) measured 7- through 12-year-olds' brand specific knowledge by asking children to list as many names of beers as they could (unaided awareness), to identify the alcoholic beverages in a list of product names (aided awareness), and to match beer logos with the brands they represent (aided awareness). Children's knowledge about beer brands was considerable, and 7- to 9-year-olds knew just as much brand specific information as 10- to 12-year-olds. In a study of 9- to 11-year-old children, Lieber (1996) found that one year after the introduction of the Budweiser Frogs advertising campaign, the Frogs had higher slogan recall than Tony the Tiger (Frosted Flakes), Smokey the Bear (preventing forest fires), or the Mighty Morphin' Power Rangers (TV show).

Brand preference can be defined as having a personal liking or preference for one brand over another. This can be operationalized in a number of ways. It is measured most simply by asking directly what one's favorite brand of a particular product is. It can also be measured more indirectly, by asking about the emotional connotations conjured up by various brands (e.g., Perfect & Askew, 1994). For example, what do the names Nike, McDonald's, and Ralph Lauren/Polo make you think about? If the connotations for Nike are favorable, you may be more likely to prefer to purchase shoes that have this logo on them. Sometimes this is called brand status.

Brand usage is simply that. Advertisers do not expect that by simply viewing an ad, one will immediately rush out and purchase the advertised product. They expect that as consumers get to know the brand name (brand awareness), familiarity and preference will increase. Once preference has been established, the consumer will try the product. From this point on, advertisers hope that the ads will make consumers feel comfortable with the product and even imagine a personal relationship with it. This builds brand loyalty. Brand loyalty can be measured in many ways. For instance, if a college student will only purchase Coca-Cola and not Pepsi Cola, she can be classified as loyal to the brand. Owning peripheral materials, such as Coca-Cola drinking glasses or other brand-labeled paraphernalia, is another way of defining brand loyalty.

The present study attempts to add to the literature on the effects of beer ads on adolescents in two ways. First, it may be the case that looking for simple, direct effects of advertising exposure on adolescent drinking intentions and behavior is too limited. It seems appropriate to broaden the research approach to include measuring media effects. If, for example, attitudes have been shown to be theoretically and empirically related to advertising, then holding positive drinking attitudes can be considered to be a media-related effect. Second, this study also broadens the methodological approach to studying the effectiveness of advertising by including indicators similar to those used by advertisers.

Method

Participants

One thousand, five hundred and eighty-eight 7th through 12th grade students participated in the study. Students were recruited from two Midwestern suburban junior high schools, one Eastern urban junior high school, and two Midwestern suburban senior high schools. Students were recruited from mandatory health classes.

The mean age of respondents was 15.2 (sd = 1.45; range = 12 - 19). Forty-nine percent of respondents were male and 51 percent were female. Ninety percent classified themselves as Caucasian (this percentage is representative of the areas of the country from which students were sampled). The response rate was greater than 90 percent in all classrooms. Participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Measures

Participants completed a survey questionnaire based on those used by Grube and his colleagues (e.g., Grube & Wallack, 1994). It included the following sections:

Salient commercials. Prior to any items indicating that the survey would ask about beer and alcohol, students were asked to think of two TV commercials they really liked and describe what products are being advertised in those commercials. Students were later asked to describe one beer commercial they had seen on TV, and to describe what they liked and disliked about it.

Television viewing. Amount of television (TV) viewing was measured by asking students to report how many hours they watch TV on a typical school day between 6 am and noon, between noon and 6 pm, between 6 pm and midnight, and between midnight and 6 am. Students also reported time spent watching TV on a typical weekend day during the same four viewing periods. Weekly amount of TV viewing was calculated from these data. Students were also asked how many sports programs they had watched on TV during the previous 4 weeks ("none" to "7 or more). This question was included because beer advertising is much higher during sports programming than other programming (e.g., Madden & Grube, 1994).

Perceived parental and peer drinking. Students were asked to indicate how often they thought their mothers, fathers, best female friends, and best male friends had consumed alcohol during the past year (6-point scale, "not at all" to "almost every day"). Mean scores for parental drinking (scale reliability $\alpha = .73$) and peer drinking ($\alpha = .79$) were calculated.

Perceived parental and peer approval of drinking. Students reported how much they thought their mothers, fathers, best female friends, and best male friends would approve or disapprove if the responding student were to drink alcohol now (5-point scale, "would disapprove very much" to "would approve very much"). Mean scores for parental approval ($\alpha = .81$) and peer approval ($\alpha = .83$) were calculated.

Attitudes about drinking. Beliefs about the positive aspects of drinking (henceforth called "positive beliefs") were measured by having students indicate their agreement with fourteen positive statements about drinking. Agreement or disagreement was measured on a five point scale ("strongly agree" to "strongly disagree"). The statements refer to the types of images that beer ads attempt to portray (e.g., "There is always beer at a really good party," "People who drink beer have

more fun than people who don't drink beer," "Drinking beer is a good way to relax"). Reliability for the positive belief scale is $\alpha = .93$.

Beliefs about the negative aspects of drinking (henceforth called "negative beliefs") were measured by having students indicate their agreement with five negative statements about drinking on the five-point agreement scale. The statements refer to facts about the dangers of drinking (e.g., "It is very dangerous to drive after having 1 or 2 alcoholic drinks"). Reliability for the negative belief scale is $\alpha = .57$.

Intention to drink as an adult. Students were asked how often they thought they would drink beer, wine, wine coolers, and liquor after age 21. Students indicated their intention to drink on a six-point scale ("not at all" to "almost every day").

Current drinking behavior. Students were asked a number of questions about their drinking behavior: (1) whether they had ever had a whole drink, (2) age at first drink, (3) frequency of drinking during the past year, and (4) whether they had ever consumed five or more drinks within two hours (binge drinking).

Awareness of beer brands. Students were asked to list the names of all the brands of beer, wine and wine coolers, and liquor they could think of. In market research, this is a standard approach for measuring unaided brand awareness. Students were subsequently presented with a list of 28 specific brands of beer and reported whether they had ever heard of them. This is a standard measure of aided awareness. Two of the 28 brands were foils (fake brands).

Brand preference, status, usage, and loyalty. Students were asked to name their favorite brand of alcoholic beverage, regardless of whether they had ever tried it (brand preference). Brand status was measured by asking students what brands of alcoholic beverages the popular kids would drink at a party. Brand usage was measured by asking students whether they had ever personally drunk each of 28 named brands of beer (including the two foils). Brand loyalty was measured by asking students if they owned any alcohol related products (e.g., t-shirts, posters, etc.), and what brands were depicted on them.

Demographic and background variables. Students were asked to provide information about their ages, grades, sex, racial/ethnic background, and parental education level.

The survey was pretested with 218 students.

Procedure

Data were collected between September 2, 1999, and May 25, 2000. Interested teachers volunteered their classrooms for inclusion in the study. Each of the participating classrooms was a mandatory class (i.e., not elective) to reduce the likelihood of self-selection bias. Consent procedures appropriate for each school were followed.

The children's normal classroom teachers were trained to administer the surveys. The teachers administered the surveys during one normal class period. The surveys were completed anonymously. Approximately six weeks after completing the survey, the researchers presented the data to each class whose teacher desired it.

Results

Descriptive Results

Fifty-five percent of 7th through 12th grade students have had a whole drink of beer, wine, or liquor. The average age of first drink is 13.4 years (sd = 2.2). Thirty-one percent have had one or more whole drinks at least once a month during the previous year. Forty-three percent have engaged in binge drinking (defined as having consumed five or more alcoholic beverages within a two-hour period).

The average student reported watching 24 hours of television a week (sd = 15.3). The average (median) student has watched two sports programs all or most of the way through within the past four weeks.

Correlations between Advertising Exposure and Intention to Drink

Using amount of sports programming watched or amount of television watched per week as indices of exposure to advertising, there are small but significant correlations between advertising exposure and intention to drink as an adult. Intention to drink is positively correlated with both sports viewing ($r = .21$, $p < .001$) and weekly amount of television viewing ($r = .19$, $p < .001$).

Advertising Effectiveness

As already noted, advertising is designed to influence the public's brand awareness, brand preference, brand usage, and brand loyalty. To measure the effectiveness of beer advertising, we correlated the advertising budgets of 26 brands of beer (list is seen in Appendix A) with the percentage of students who had (1) heard of, (2) preferred, (3) used, and (4) shown loyalty to each of those brands.

Brand Awareness.

Advertisers often measure two types of brand awareness, aided and unaided awareness. Unaided awareness is measured by asking respondents to recall brand names, whereas aided awareness is measured by asking respondents to recognize brand names. Both types of awareness were measured. Students were asked to name all the brands of beer they could (unaided awareness), and were also presented with a list of 26 beer brands and asked whether they had ever heard of each of them. The percentage of students who named or recognized each of the 26 brands was correlated with the amount of money spent to advertise each brand in 1998 and 1999 (Adams Beer Handbook, 2000). The correlations are shown in Table 1, and examples are shown in Table 2. The Pearson correlation between free recall of brands (unaided awareness) and the amount of money spent to advertise each brand was $r = 0.73$. The correlation between recognition (aided awareness) and advertising budgets was $r = 0.71$.

Brand Preference.

Students were asked to name their favorite brand of alcoholic beverage, regardless of whether they had ever tried it. The percentage of students who named each of the 26 brands was correlated with the amount of money spent to advertise each brand. An $r = 0.66$ correlation between size of advertising budget and adolescent beer brand preference was found.

Advertisers sometimes measure preference with measures of brand status or prestige. We asked students to "assume you go to a party, and all the popular kids are there. If the popular kids were drinking alcoholic beverages, what brand(s) of alcoholic beverages would they be drinking?" The percentage of students who named each of the 26 brands was correlated with the amount of money spent to advertise each brand. There is an $r = 0.72$ correlation between size of advertising budget and beer brand status.

Brand Usage.

Students were asked whether they had personally consumed each of 26 beer brands. The percentage of students who had drunk each of the 26 brands was correlated with the amount of money spent to advertise each brand. There is an $r = 0.79$ correlation between size of advertising budget and which brands of beer junior and senior high school students drink.

Brand Loyalty.

Students were asked whether they own any alcohol-related products, and if so, what brands are advertised on them. One-quarter of students own alcohol-related products (such as t-shirts, baseball caps, cups, etc.). The percentage of students who named each of the 26 brands was correlated with the amount of money spent to advertise each brand. There is an $r = 0.63$ correlation between size of advertising budget and which brands of beer are advertised on products teens own.

Predicting Intention to Drink

Multiple regression analyses were conducted to predict students' intention to drink after age 21. The independent variables included sex, age, parents' education level, peer and parent approval of drinking, peer and parent frequency of drinking, the amount of TV and sports watched, the number of beers named (both aided and unaided), and positive and negative beliefs about drinking. Collectively, these accounted for 48 percent of the variance in intention to drink ($F(16,1278) = 80.7$, $p < .001$). Johnson's relative weight analysis was conducted to determine the relative importance of each of the predictors (Johnson, 2000; Johnson, in press). Relative weight estimates the proportionate contribution each predictor makes to the overall R^2 while considering both its unique contribution and its contribution when combined with other variables (Johnson, 2000). The results of this analysis are shown in Figure 1.

Of the individual variables, positive drinking beliefs account for the greatest amount of variance (14%). Positive drinking beliefs have been theoretically and empirically related to exposure to beer ads (e.g., Grube & Wallack, 1994). Beer brand awareness, measured by the number of beers that students can name, (both aided and unaided), accounts for nine percent of the variance in intention to drink. Because brand awareness is so highly correlated with the amount of money spent on advertising, it is likely that this is related to exposure to advertising. The amount of television watched per week and the number of sports programs watched in the past month account for two percent of the variance in intention to drink. Taken together, 25 percent of the variance in intention to drink is due to media-related variables.

Peer drinking and approval accounts for 10 percent of the variance, while parents' drinking and approval accounts for five percent. Negative drinking beliefs (the amount that students believe in the dangers of drinking) account for only three percent of the variance in intention to drink (these attitudes are negatively related to intention). Demographic variables (sex and age) account for five percent of the variance.

Predicting Drinking Behavior

Multiple regression analyses were conducted to predict students' frequency of drinking alcohol. The independent variables included sex, age, parents' education level, peer and parent approval of drinking, peer and parent frequency of drinking, the amount of TV and sports watched, the number of beers named (both aided and unaided), and positive and negative beliefs about drinking. Collectively, these accounted for 61 percent of the variance in frequency of drinking ($F(16,1281) = 133.6$, $p < .001$). Relative weights analysis was conducted again to determine the relative contributions of each of the variables. The results of this analysis are shown in Figure 2.

Peer drinking and approval account for the greatest amount of variance in drinking behavior (30%). Media-related issues, such as positive drinking beliefs and brand awareness, account for 21 percent of the variance in adolescent drinking. Parent drinking and approval account for four percent, negative drinking beliefs account for one percent, and demographic variables account for four percent.

Discussion

When measuring exposure to advertising with measures such as amount of television watched per week or number of sports programs viewed, these results are consistent with the existing literature, such as studies by Atkin, Hocking, Block (1984). This study demonstrates an approximately .20 correlation between gross measures of advertising exposure and intention to drink as an adult. In interpreting the sizes of correlations, Cohen (1992) has suggested that a correlation of .10 is small, but not unimportant; a correlation of .30 is moderate; and a correlation of .50 is large. One possible interpretation of this consistent small correlation is that media do not have a large effect on adolescent drinking attitudes and behaviors. However, another possible interpretation is that using gross measures of advertising exposure does not provide enough precision to find a larger effect. Partly because of this, we included measures of advertising efficacy similar to the indicators used by advertisers.

Analyses of advertising efficacy revealed larger correlations. The most heavily advertised brands of beer in 1998 and 1999 are the ones that had the highest (1) brand awareness, (2) brand preference, (3) brand usage, and (4) brand loyalty among junior and senior high school students during the 1999-2000 school year. Correlations for each of these range from .63 to .79, with the highest correlation (r = 0.79) between beer advertising budgets and adolescent drinking. It should be noted that it is illegal for anyone under age 21 to buy beer.

This approach is similar to studies conducted in the 1990s documenting a connection between cigarette advertising and youth smoking (see Strasburger, 2001, for a review). In one study, children as young as six showed brand awareness for Old Joe Camel (for Camel cigarettes) at levels as high as those for the Mickey Mouse silhouette (Fischer, Schwartz, Richards, Goldstein, & Rojas, 1991). Pollay et al. (1996) showed, using standard market share analyses, that cigarette advertising budgets was significantly related to the percentage of adolescents who smoked each brand. Longitudinal studies indicated that even teens who did not smoke and did not plan to smoke were three times more likely to begin smoking if they owned a smoking-related promotional item than were teens who did not own promotional items (Pierce, Choi, Gilpin, Farkas, & Berry, 1998).

Using regression analyses, we were able to predict a great deal of the variance in adolescents' intention to drink beer (R^2 = .48). Even if one interprets this regression using a "hypodermic syringe" model of media effects, there is some support for the hypothesis that exposure to beer ads affects intention to drink as an adult. The amount of television and sports watched accounted for two percent of the variance (out of the 48%), even controlling for peer approval and frequency of drinking, parent approval and frequency of drinking, and demographic variables (sex, parents' education level, and age).

However, if one uses a less restrictive media effects model to interpret the results, a much greater amount of the variance is accounted for by media-related variables. Positive drinking attitudes and aided and unaided brand awareness can also be considered media-related variables. Each of these variables is related to exposure to advertisements both theoretically and empirically (e.g., Grube & Wallack, 1994; Austin & Meili, 1994; Miller, Smith, & Goldman, 1990). In this study, the correlation between advertising budgets and brand awareness was r = .73 for unaided awareness and r = .71 for aided awareness. It could be argued that brand awareness might also be due to exposure to beer brands via parents or peers. This is undoubtedly true. Yet the relative weights

statistical procedure takes shared variance into account when partitioning the variance among the predictors. Peer and parent frequency of drinking and approval of drinking were included in the regression model. Thus, the estimates of variance accounted for by aided and unaided brand awareness are not likely to be due to peer or parent influence.

Considering these media-related issues together, 25 percent of the variance in adolescents' intention to drink beer as an adult is due to media-related variables. Peer-related variables account for 10 percent of the variance, parent-related variables account for five percent, demographic variables account for five percent, and negative drinking attitudes (beliefs about the dangers of drinking) account for three percent. Thus, of the variables measured here, media-related variables account for the greatest amount of variance in adolescents' intention to drink.

Using regression analyses, we were also able to predict a great deal of the variance in adolescents' frequency of drinking beer ($R^2 = .61$). Here, peer-related variables accounted for the greatest amount of variance in adolescents' drinking behavior, accounting for 30 percent of the variance. However, media-related variables accounted for 21 percent of the variance. Parent-related variables accounted for four percent, demographic variables for four percent, and negative attitudes for only one percent of the variance.

One obvious limitation of this study is its correlational design. We cannot infer causality from the results, although the results are consistent with causal theories. Another limitation is the self-report nature of the study. However, others have found that self-reports of drinking behavior tend to be reasonably reliable and valid, even among problem drinkers (e.g., Sobell & Sobell, 1978).

Over the course of 1998 and 1999, the top 10 beer brewers spent $1,520,490,300 on print and broadcast advertising alone (Adams Beer Handbook, 2000). August Busch IV, vice president of Anheuser-Busch's marketing and wholesale operations has said about the current "Whassup?!" campaign, "In our lifetimes, we'll never see so much value created from a single idea. It makes Budweiser a brand for every culture, every demographic, and every community. It makes Budweiser a younger, hipper, more contemporary brand" (McCarthy, 2000). We do not have any evidence of intention to target youth. However, given the results of this study, along with others that demonstrate that children recognize and like beer advertisements, slogans, and mascots (e.g., Lieber, 1996; Long, Brown, Smith, & Smith, 1998), it seems clear that beer advertising is attractive to children and is a major contributor to underage drinking. A negative consequence, intended or not, is still a negative consequence. That realization should lead beer companies to change their approaches to marketing and advertising. This issue becomes even more important because of recent decisions by the hard liquor industry to begin advertising on radio and television, breaking a 50-year-old self-imposed ban on such advertisements (DISCUS, 1996).

The beer industry has a self-administered regulatory code. The beer industry's Advertising and Marketing Code prohibits advertisers from using advertising that is "intended to appeal primarily" to minors, where "primary appeal" is defined as "special attractiveness to such persons above and beyond the general attractiveness it has for persons above the legal purchase age, including young adults above the legal purchase age" (Beer Institute, guideline 4a). This allows for ads to include any number of features that research has shown to be attractive to children, such as cartoon characters, as long as they are not "intended to appeal primarily" to them. Furthermore, the advertising code prohibits the placement of advertisements in media where "most of the audience" (i.e., over 50%) is expected to be below drinking age (Beer Institute, guideline 4d). Only 30 percent of the U.S. population is below 21, and only 10 percent is between 11 and 17. Therefore, this greater than 50 percent child audience standard allows ad placements on programs even when the audience is disproportionately composed of children (Evans & Kelly, 1999).

The Federal Trade Commission has recommended that the Beer Code be amended to restrict ad placement to programs with at least 75 percent legal-age audiences. They have further

recommended that beer companies take steps to reduce the likelihood that ads appeal to underage consumers, rather than to simply require that advertisements not be "especially attractive" to minors above and beyond how attractive they may be to 21-year-olds (Evans & Kelly, 1999). We second these recommendations.

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Table 1

Correlations between Beer Brand Advertising Budgets and Adolescent Brand Awareness, Brand Preference, Brand Usage, and Brand Loyalty.

	Health Class Students
Brand Awareness	
Unaided Brand Awareness	.73
Aided Brand Awareness	.71
Brand Preference	
Personal Favorite Brand of Beer	.66
Brand Status/Prestige	.72
Brand Usage	
Brands Drunk by Adolescents	.79
Brand Loyalty	
Brands of Alcohol-Related Products Owned	.63

Note: All correlations are significant at $p < .001$.

Table 2

Brand Awareness, Brand Preference, Brand Usage, and Brand Loyalty among 7th – 12th Grade Students for Top Five Advertised Brands

Top Five Advertised Brands*	1998-1999 Advertising Budget	Percentage of Students Who Have Heard of This Brand (Brand Awareness)	Percentage of Students Who Prefer This Brand (Brand Preference)	Percentage of Students Who Have Consumed This Brand (Brand Usage)	Percentage of Students Who Own Brand-Related Products (Brand Loyalty)
Budweiser/Bud Light	$492,232,000	99%	28%	44%	54%
Miller Genuine Draft/Miller Lite	$262,362,400	97%	8%	39%	6%
Coors/Coors Light	$224,239,800	90%	1%	22%	9%
Corona/Corona Extra	$53,503,100	65%	4%	20%	10%
Heineken	$49,594,400	79%	3%	20%	1%

*Note: Brands with similar names have been combined for this table.

Figure 1

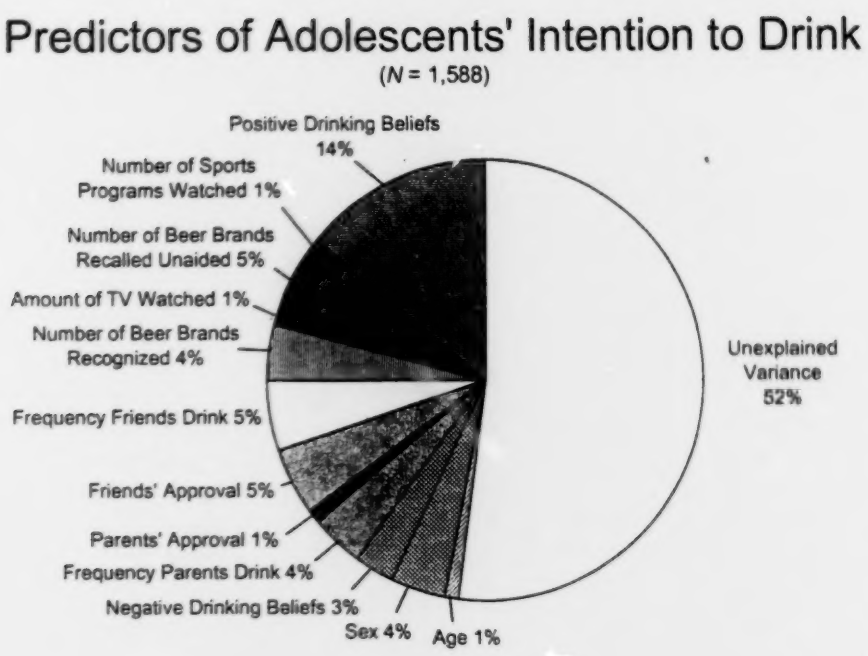
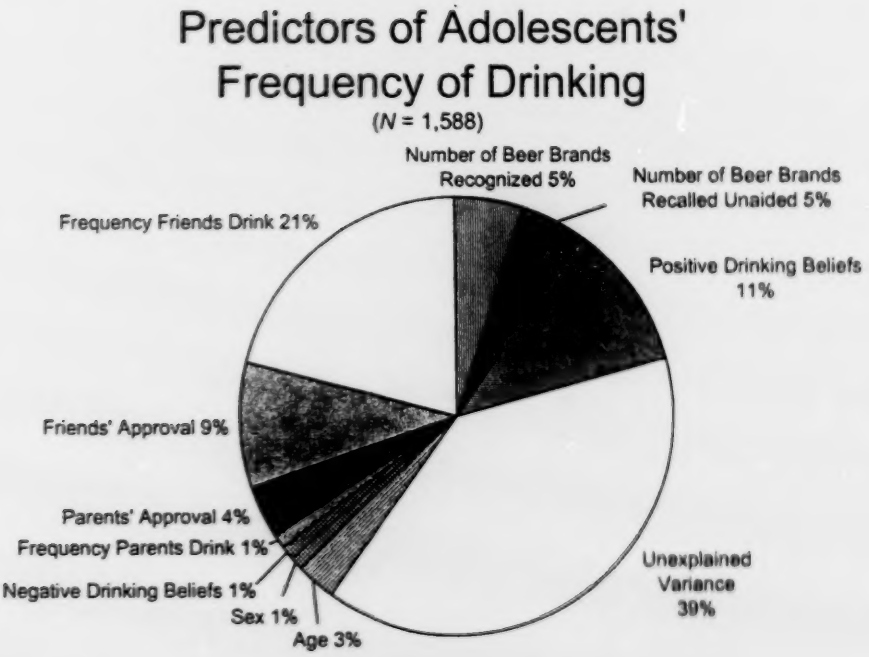

Predictors of Adolescents' Intention to Drink
(N = 1,588)
Positive Drinking Beliefs 14%
Number of Sports Programs Watched 1%
Number of Beer Brands Recalled Unaided 5%
Amount of TV Watched 1%
Number of Beer Brands Recognized 4%
Frequency Friends Drink 5%
Friends' Approval 5%
Parents' Approval 1%
Frequency Parents Drink 4%
Negative Drinking Beliefs 3%
Sex 4%
Age 1%
Unexplained Variance 52%

Figure 2



Appendix A

List of Beer Brands Used to Test Advertising Efficacy

Amstel Light
Beck's
Blue Moon
Bud Light
Budweiser
Busch
Coor's
Coor's Light
Corona Extra
Foster's
Genesee Ice
Guinness Ale
Harp Lager
Heineken
Labatt's Light
Leinenkugel's
Lowenbrau
Miller Genuine Draft
Miller Lite
Molson Golden
O'Doul's
Old Milwaukee
Pabst
Rolling Rock
Sam Adams' Boston Lager
Zima